



## Hydraulic Accumulators with Back-Up Nitrogen Bottles

### 1. GENERAL

To complete the accumulator range, HYDAC provides a variety of useful accessory products. They guarantee correct installation and optimum functioning of HYDAC hydraulic accumulators. They include nitrogen bottles which can be used to back up bladder and piston accumulators. Nitrogen bottles used as back-ups increase the gas volume in the accumulator. This means that smaller accumulators can be used for the same gas volume and costs can be reduced.

For further information, please turn to the sections:

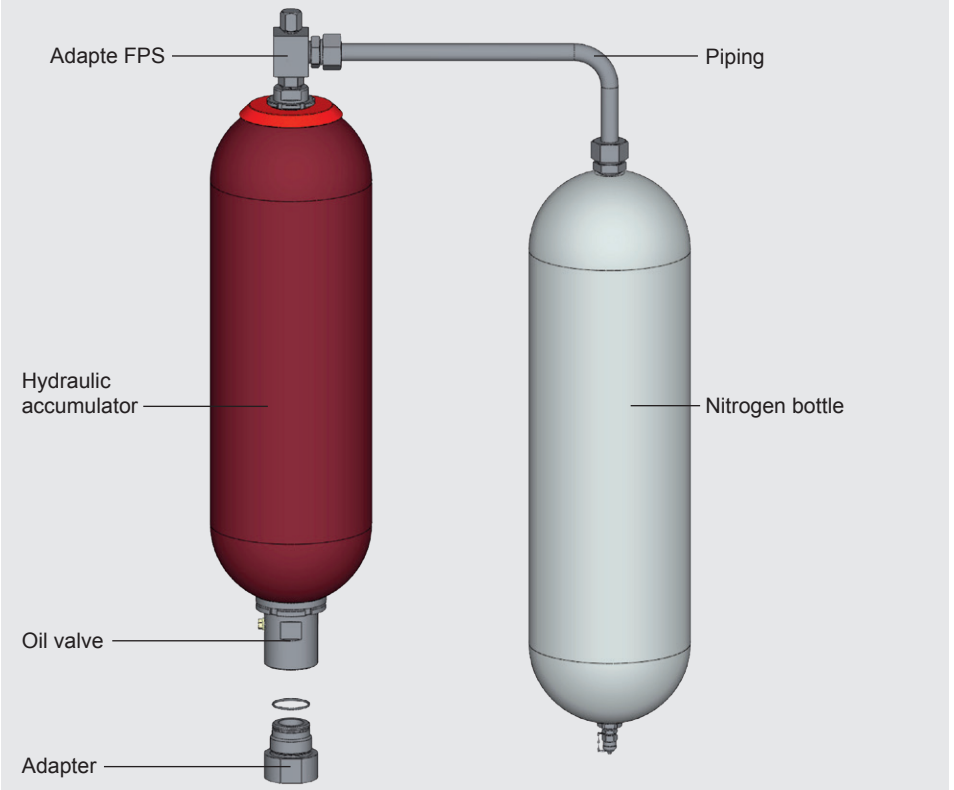
- Bladder Accumulators  
Standard  
No. 3.201
- Piston Accumulators  
Standard  
No. 3.301

### 2. BACK-UP VERSIONS

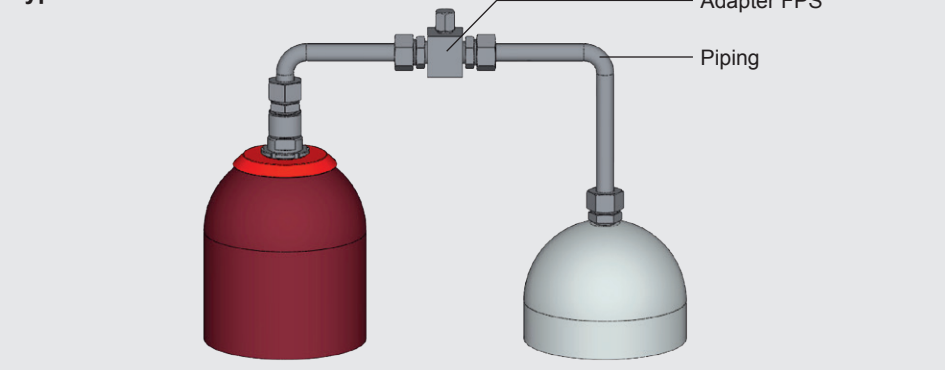
#### 2.1. SET-UP USING THE EXAMPLE OF A BLADDER ACCUMULATOR

Based on bladder accumulator models 20 ... 50 l, the gas-side of these accumulators is designed especially for connecting to nitrogen bottles. A diffuser rod prevents damage to the bladder when the accumulator is charged. This design can also be used for the separation of fluids (taking into account the volume ratios which apply to bladder accumulators).

Type 1

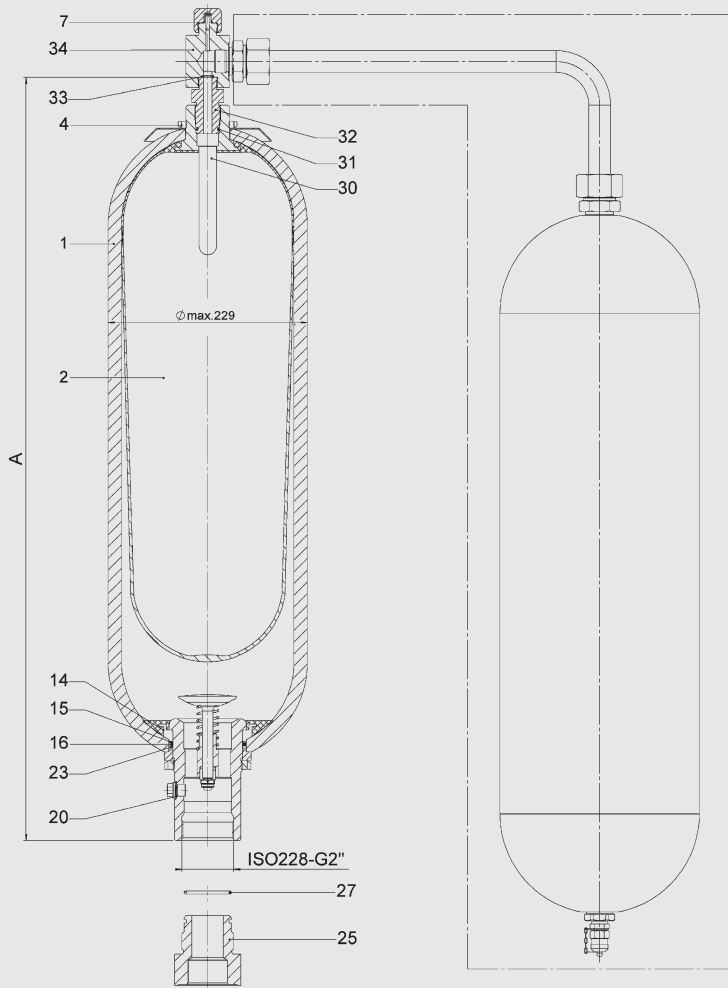


Type 2

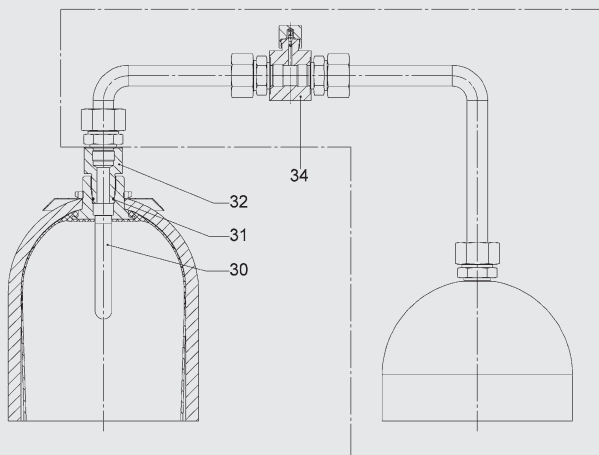


## 2.2. DIMENSIONS

Type 1



Type 2



Nominal volume [l]	Effect. gas volume [l]	Weight [kg]	A max. [mm]
20	17.5	53.5	905
24	24	72	1070
32	32.5	89	1420
50	47.5	119.5	1930

others on request

## 2.3. SPARE PARTS

NBR, carbon steel, standard gas valve

Nominal volume of accum. [l]	Seal kit Part no.	Repair kit	
		Type 1 Part no.	Type 2 Part no.
20	353621	3119500	3897464
24		3119502	3897463
32		3119498	3897462
50		3119499	3897461

Description	Item
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### Bladder assembly consisting of:

Bladder	2
Lock nut	4
Diffuser rod	30
O-ring 22x2.5 <sup>1)</sup>	31
Adapter for type 1/2	32

### Seal kit consisting of:

O-ring 7.5x2 <sup>1)</sup>	7
Washer	15
O-ring 80x5 <sup>1)</sup>	16
Seal ring	20
Support ring	23
O-ring 48x3 <sup>1)</sup>	27

### Repair kit consisting of:

Bladder assembly (see above)	
Seal kit (see above)	
O-ring 11x2 <sup>1)</sup>	33

Anti-extrusion ring	14
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Adapter FPS for type 1/2 <sup>2)</sup>	34
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### Recommended spare parts

<sup>1)</sup> for code 663 and 665 different dimensions

<sup>2)</sup> see section 4.

Accumulator shell (item 1) not available as a spare part

Adapter (item 25) incl. O-ring (item 27) available as an accessory, see catalogue section:

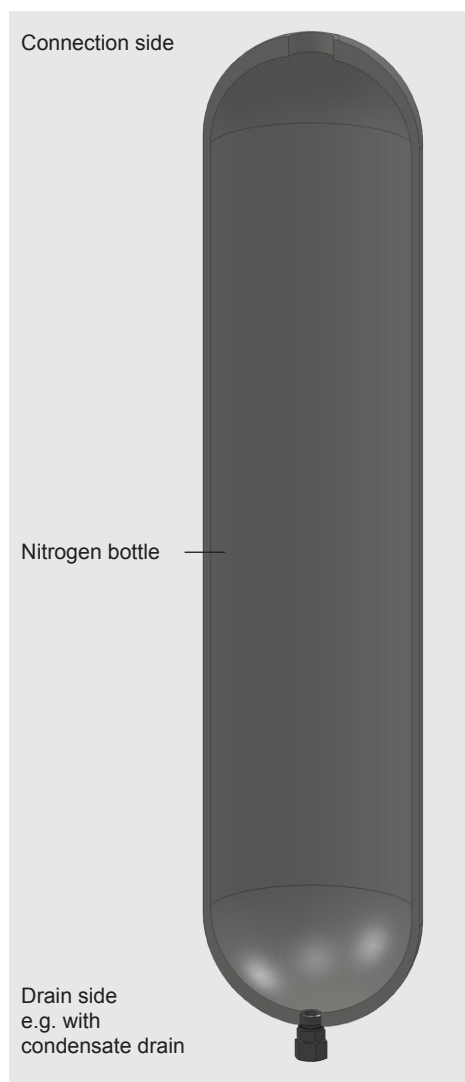
Bladder Accumulators Standard No. 3.201, section 4.

Adapter (item 32) for type 1 standard

For other spare parts, see section 3.

### 3. NITROGEN BOTTLES

#### 3.1. DESCRIPTION AND DESIGN



HYDAC nitrogen bottles are used for receiving and storing nitrogen.

HYDAC supplies various versions, such as standard nitrogen bottles made from forged vessels and special vessels based on bladder accumulator shells (SN...B), piston accumulator tubes (SN...K) and diaphragm accumulator halves (SN...M), see catalogue sections:

- Bladder Accumulators  
Standard  
No. 3.201

- Piston Accumulators  
Standard  
No. 3.301

- Diaphragm Accumulators  
No. 3.100

The following technical specifications refer to standard nitrogen bottles. Please ask us for information regarding other designs.

#### 3.2. ADVANTAGES

Using HYDAC nitrogen bottles provides the following advantages:

- cost-effective increase of the accumulator volume and as a result
- smaller accumulators for the same gas volume.

#### 3.3. SPECIFICATIONS

##### 3.3.1 Model code

**Not all combinations are possible.  
Order example. For further information,  
please contact HYDAC.**

	<b>SN360</b>	-	<b>50</b>	<b>AA</b>	/	<b>010</b>	<b>U</b>	-	<b>360</b>	<b>D</b>	<b>G</b>	-	<b>C</b>
<b>Series</b>													
<b>Code</b>	No details = standard special types (see section 3.1.)												
<b>Nominal volume [l]</b>	50												
<b>Connection type</b>	AA												
<b>Version, drain side (condensate)</b>	010												
A = ISO 228 (BSP)													
B = DIN 13 to ISO 965/1 (metric)													
C = ANSI B1.1 (UNF seal SAE)													
D = ANSI B2.1													
F = flange													
1 = sealed with plug													
2 = with condensate drain, allen screw													
3 = with condensate drain valve													
4 = with Minimess valve													
<b>Connection type on connection side</b>	U												
A = ISO 228 (BSP)													
B = DIN 13 to ISO 965/1 (metric)													
C = ANSI B1.1 (UNF seal SAE)													
D = ANSI B2.1													
F = flange													
<b>Material code</b>	360												
<b>Material (of connection)</b>	D												
0 = no installed parts													
1 = carbon steel													
3 = stainless steel <sup>1)</sup>													
4 = carbon steel with protective coating													
6 = low temperature steel													
<b>Housing material</b>	G												
1 = carbon steel													
2 = carbon steel with protective coating													
4 = stainless steel <sup>1)</sup>													
6 = low temperature steel													
<b>Seal material (elastomer)</b>	C												
0 = no elastomer used													
2 = NBR													
4 = IIR													
5 = low temperature NBR													
6 = FKM													
<b>Certification code</b>	U												
U = European Pressure Equipment Directive (PED)													
<b>Permitted operating pressure [bar]</b>	360												
<b>Size for drain side (see Table 3.3.2)</b>	D												
<b>Size for connection side (see Table 3.3.2)</b>	G												
0 = for type 1-4													
<b>Version</b>	C												
No details = standard													
C = compact													
<sup>1)</sup> dependent on type and pressure range													

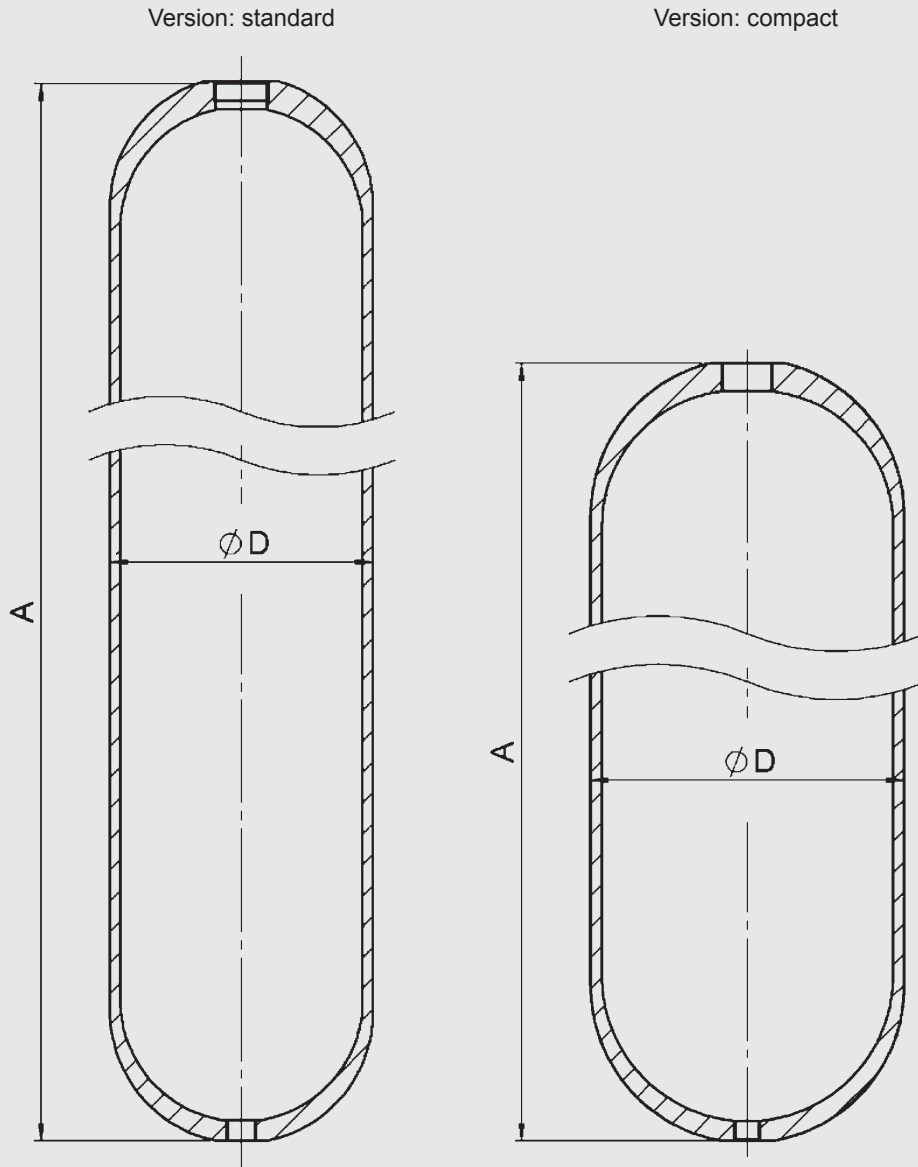
##### 3.3.2 Connections

Standard connections are highlighted in grey.

All other versions available on request (not all combinations are possible).

Type	A	B	C	D	F
	BSP ISO 228	metric DIN13 ISO965/1	SAE ANSI B1.1	NPT ANSI B2.1	Flange connection
Size					
A	G 1/4"	M12x1.5	7/16"-20UNF	1/4"	1/2" 3000 psi Code 61
W	G 3/8"	M18x1.5	9/16"-18UNF	3/8"	3/4"
C	G 1/2"	M22x1.5	3/4"-16UNF	1/2"	1"
D	G 3/4"	M27x2	1 1/16"-12UN	3/4"	1 1/4"
E	G 1"	M33x2	1 5/16"-12UN	1"	1 1/2"
F	G 1 1/4"	M42x2	1 5/8"-12UN	1 1/4"	2"
G	G 1 1/2"	M48x2	1 7/8"-12UN	1 1/2"	1/2" 6000 psi Code 62
H	G 2"	M14x1.5	2 1/2"-12UN	2"	3/4"
I	G 1 3/4"	M8	-	-	-
K	-	M16x1.5	-	-	1 1/4"
L	-	-	7/8"-14UNF	5/8"	1 1/2"
M	-	-	-	-	2"
S	Special version				

### 3.3.3 Dimensions



Series	Volume [l]	Version	Certification code	Connections to ISO 228 (Type AA)		A ± 25 [mm]	D ± 1% [mm]	Weight approx. [kg]	Part no.	Designation
				Drain side	Conne- tion side					
SN360	50	Standard	U	G 3/4	G 3/4	1590	229	89	3176324	SN360-50AA/010U-360DD
				G 3/4	G 1 1/2				3418347	SN360-50AA/010U-360DG
			S	G 3/4	G 1 1/2				3987605	SN360-50AA/010S-210DG
	75	Standard	U	G 3/4	G 1 1/2	2280	229	126	3561595	SN360-75AA/010U-360DG
				S	G 3/4				G 1 1/2	3987606
		Compact	U	G 3/4	G 1 1/2	1690	273	124	3987162	SN360-75AA/010U-360DG-C
S				G 3/4	G 1 1/2				3987163	SN360-75AA/010S-200DG-C
SN600	50	Standard	S	G 3/4	G 1 1/2	1730	241	143	3987613	SN600-50AA/010S-345DG
	75	Standard	S	G 3/4	G 1 1/2	2500	232	197	3987614	SN600-75AA/010S-345DG

## 4. ACCESSORIES

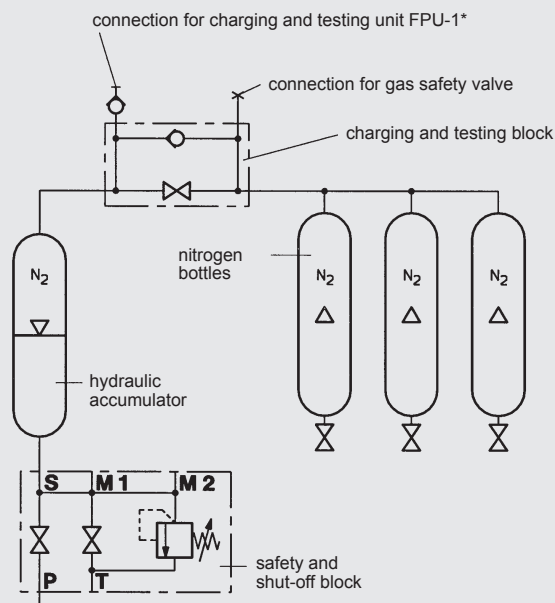
### 4.1. CHARGING AND TESTING BLOCK F + P

#### 4.1.1 Description

The HYDAC charging and testing block F+P is used to charge and test back-up type hydraulic accumulators. It has connections for the charging and testing unit FPU-1 and for pressure gauges. As a safety function, a gas safety valve GSV6 (see catalogue section given below) can be fitted. In addition, it allows the back-up nitrogen bottles to be shut off from the hydraulic accumulator.

- Safety Equipment for Hydraulic Accumulators  
No. 3.552

#### 4.1.2 Hydraulic circuit with charging and testing block



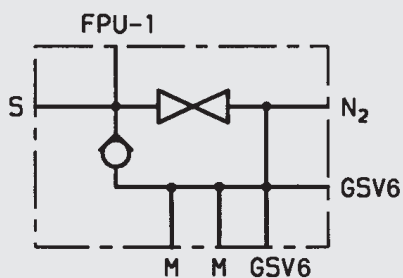
\* For further information, see catalogue section:

- Charging and Testing Unit FPU  
No. 3.501

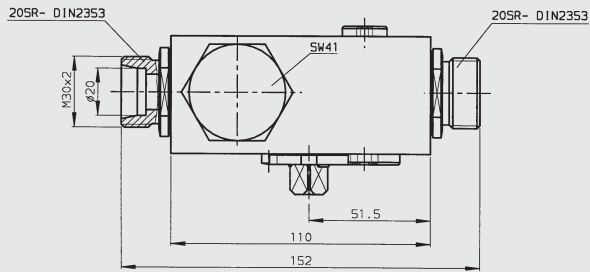
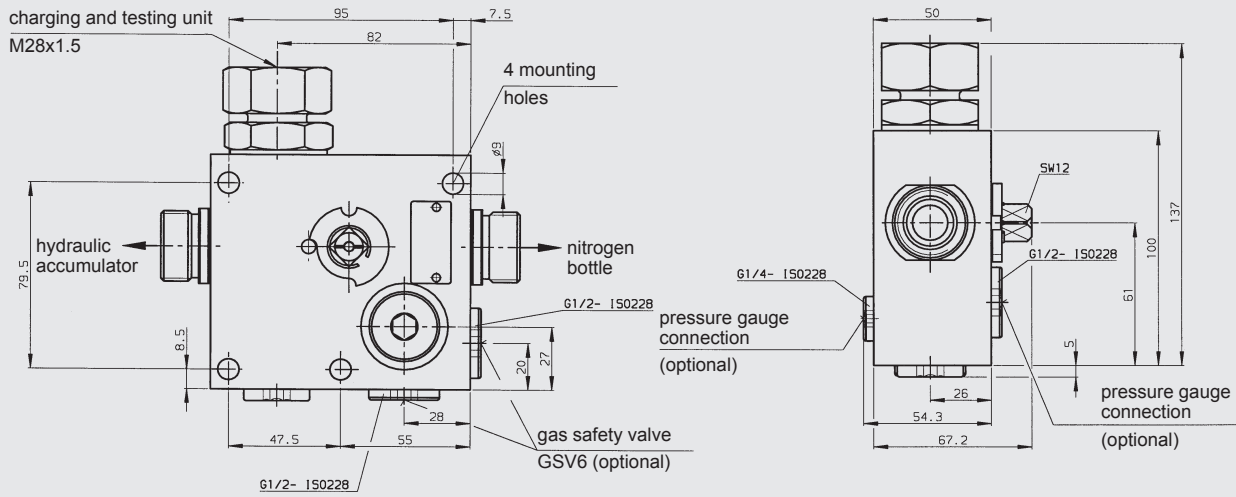
#### 4.1.3 Preferred models / spare parts

Designation	Max. operating pressure [bar]	Weight [kg]	Part no.	Seal kit <sup>1)</sup>
F+P-16-20SR-6112-02X	400	4.3	850233	2115776
F+P-32-38SR-6112-02X	350	14	552193	2112088

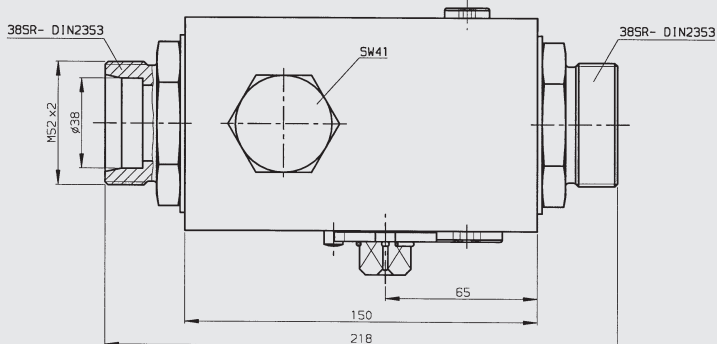
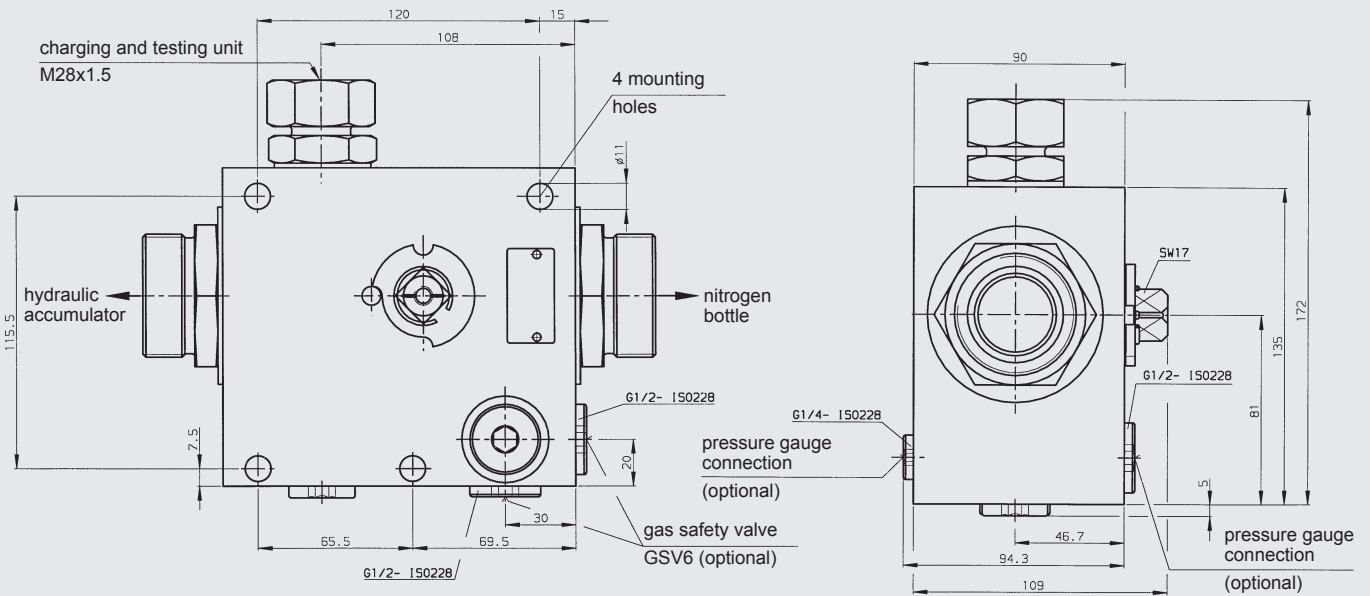
<sup>1)</sup> recommended spare parts



#### 4.1.4 Technical data/dimensions Charging and testing block DN 16

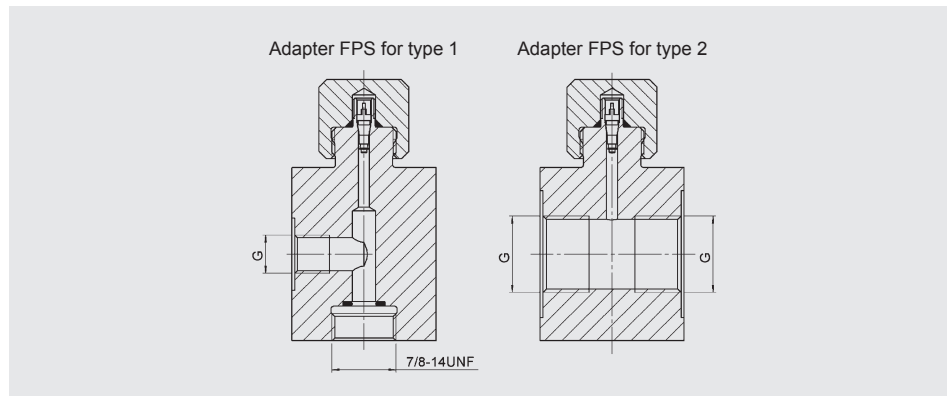


#### Charging and testing block DN 32



## 4.2. FPS ADAPTER

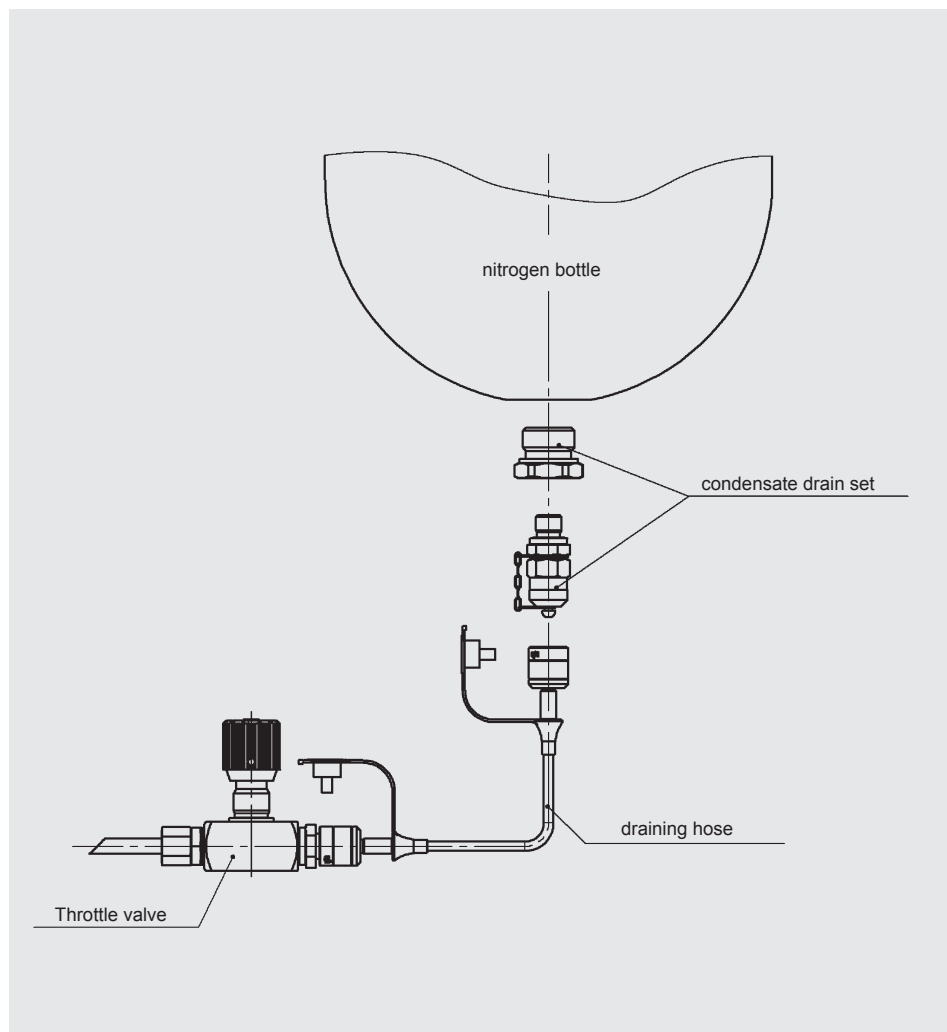
The HYDAC FPS adapter is used to charge back-up type hydraulic accumulator systems. For this it has a connection for the charging and testing unit FPU-1.



Designation	G ISO 228	Part no.	Type
Adapter FPS 7/8-14UNF	G 3/4	363226	1
Adapter FPS	G 3/4	243218	2

## 4.3. CONDENSATE DRAIN SET

The condensate drain set consists of a throttle valve and a suitable condensate draining hose. It is used to drain any condensate from the nitrogen bottle, in a controlled way.



Designation	Length [m]	Part no.
Condensate drain G 3/4 – Minimes M16x1.5	–	3219496
	0.4	3472820
	1	3472823
Condensate drain set	1	3472823
	1.6	3472824

## 4.3. NITROGEN CHARGING UNIT



HYDAC nitrogen charging units make it possible to rapidly and inexpensively charge and/or test the required gas pre-charge pressures in bladder, piston and diaphragm accumulators. They guarantee an optimal utilisation of standard commercial nitrogen bottles up to a residual pressure of 20 bar and a maximum pre-charge pressure of 350 bar. Portable, mobile and stationary N<sub>2</sub>-Server versions are available.

For further information and technical data, see catalogue:

- Nitrogen charging units N<sub>2</sub>-Server No. 2.201

Higher pressure available on request.

## 5. NOTE

The information in this brochure relates to the operating conditions and fields of application described. For fields of application and operating conditions not described, please contact the relevant technical department. Subject to technical modifications.

**HYDAC Technology GmbH**  
 Industriegebiet  
**66280 Sulzbach/Saar, Germany**  
 Tel.: +49 (0) 68 97 / 509 - 01  
 Fax: +49 (0) 68 97 / 509 - 464  
 Internet: www.hydac.com  
 E-mail: speichertechnik@hydac.com

